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Art Unit: 2113

CLMPTO

08/11/2003

CAC

CLAIM 1 - 21 (CANCELLED)

Rule 121 23
5. (New) An apparatus for producing an extruded film tube and supplying said tube to a collapsing and roller assembly, comprising:

- (a) a die for extruding a molten material in the form of a tube;
- (b) a blower system for supplying and exhausting cooling air to and from an interior portion of said tube, and for regulating at least a portion of said blower system to control the extrusion and cooling process, and which determines in part the circumference of said tube;
- (c) at least one sizing sensor located proximate said tube for sensing the position of said tube, comparing such position to an extrusion set point, and generating an extrusion feedback error signal which is corrective of any difference between said position and said set point;
- (d) at least one lay flat sensor located proximate said tube in a position above said at least one sizing sensor for sensing the position of said tube prior to the collapsing and flattening of said tube by said collapsing and roller assembly, comparing said position to a lay-flat set point, and generating a lay-flat feedback error signal which is corrective of any difference between said position and said lay-flat set point;
- (e) a programmable controller for executing program instructions including a feedback control system which receives said extrusion feedback error signal and said lay-flat feedback error signal as feedback injection

signals and which provides a control signal to said blower system.

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23
24 24. (New) An apparatus according to Claim *23*, wherein said at least one sizing sensor and said at least one lay flat sensor are maintained in different circumferential positions relative to said tube.

24 25. (New) An apparatus according to Claim *23*, wherein said lay-flat feedback error signal is provided in the same units as said extrusion feedback error signal.

25 26. (New) An apparatus according to Claim *23*, wherein said extrusion feedback error signal defines a primary control feedback control loop, and wherein said lay-flat feedback error signal defines a supplemental feedback control loop.

26 27. (New) An apparatus according to Claim *23*, wherein said lay-flat feedback error signal is injected directly into said extrusion feedback control loop.

27 28. (New) An apparatus according to Claim *23*, wherein said lay-flat feedback error signal is analyzed prior to injection to determine if it is within a range of acceptable positions.

28 29. (New) An apparatus according to Claim *23*, wherein said lay-flat feedback error signal is analyzed prior to injection to determine if it is within an acceptable range of signal rates of change.

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30. (New) An apparatus for producing an extruded film tube and supplying said tube to a collapsing and roller assembly, comprising:

- (a) a die for extruding a molten material in the form of a tube;
- (b) a blower system for supplying and exhausting cooling air to and from an interior portion of said tube, and for regulating the at least a portion of said blower system to control the extrusion and cooling process, and which determines in part the circumference of said tube;
- (c) at least one sizing sensor located proximate said tube for sensing the position of said tube, comparing such position to an extrusion set point, and generating an extrusion feedback error signal which is corrective of any difference between said position and said set point;
- (d) at least one non-contact sensor located proximate said tube in a position above said at least one sizing sensor for sensing the position of said tube prior to the collapsing and flattening of said tube by said collapsing and roller assembly, comparing said position to a lay-flat set point, and generating a lay-flat feedback error signal which is corrective of any difference between said position and said lay-flat set point;
- (e) a programmable controller for executing program instructions including a negative feedback control system which receives said extrusion feedback error signal and said lay-flat feedback error signal as negative feedback injection signals and which provides a control signal to said blower system.

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Rule
1.26

~~30~~ 31. (New) An apparatus according to claim ~~30~~²⁹, wherein said at least one sizing sensor and said at least one non-contact sensor are maintained in different circumferential positions relative to said tube.

~~31~~ 32. (New) An apparatus according to claim ~~30~~²⁹, wherein said lay-flat feedback error signal is provided in the same units as said extrusion feedback error signal.

~~32~~ 33. (New) An apparatus according to claim ~~30~~²⁹, wherein said extrusion feedback error signal defines a primary control feedback control loop, and wherein said lay-flat feedback error signal defines a supplemental feedback control loop.

~~33~~ 34. (New) An apparatus according to claim ~~30~~²⁹, wherein said lay-flat feedback error signal is injected directly into said extrusion feedback control loop.

~~34~~ 35. (New) An apparatus according to claim ~~30~~²⁹, wherein said lay-flat feedback error signal is analyzed prior to injection to determine if it is within a range of acceptable positions.

~~35~~ 36. (New) An apparatus according to claim ~~30~~²⁹, wherein said lay-flat feedback error signal is analyzed prior to injection to determine if it is within an acceptable range of signal rates of change.

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37. (New) A method of producing an extruded film tube and supplying said tube to a collapsing and roller assembly, comprising:

- (a) extruding a molten material from a die in the form of a tube;
- (b) utilizing a blower system for supplying and exhausting cooling air to and from an interior portion of said tube and for regulating the at least a portion of said blower system to control the extrusion and cooling process, and which determines in part the circumference of said tube;
- (c) locating at least one sizing sensor proximate said tube for sensing the position of said tube;
- (d) comparing such position to an extrusion set point;
- (e) generating an extrusion feedback error signal which is corrective of any difference between said position and said set point;
- (f) locating at least one non-contact sensor located proximate said tube in a position above said at least one sizing sensor for sensing the position of said tube prior to the collapsing and flattening of said tube by said collapsing and roller assembly;
- (g) comparing said position to a lay-flat set point;
- (h) generating a lay-flat feedback error signal which is corrective of any difference between said position and said lay-flat set point;
- (i) providing programmable controller for executing program instructions;
- (j) including in said programmable instructions a negative feedback control system which receives said extrusion feedback error signal and said lay-flat feedback error signal as negative feedback injection signals and which provides a control signal to said blower system.

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rule 1.26
37
38. (New) A method according to claim *37*, further comprising:
locating said at least one sizing sensor and said at least one non-contact sensor in
different circumferential positions relative to said tube.

38
39. (New) A method according to claim *37*, wherein said lay-flat feedback error
signal is provided in the same units as said extrusion feedback error signal.

39
40. (New) A method according to claim *37*, wherein said extrusion feedback
error signal defines a primary control feedback control loop, and wherein said lay-
flat feedback error signal defines a supplemental feedback control loop.

40
41. (New) A method according to claim *37*, wherein said lay-flat feedback error
signal is injected directly into said extrusion feedback control loop.

41
42. (New) A method according to claim *37*, wherein said lay-flat feedback error
signal is analyzed prior to injection to determine if it is within a range of acceptable
positions.

42
43. (New) A method according to claim *37*, wherein said lay-flat feedback error
signal is analyzed prior to injection to determine if it is within an acceptable range
of signal rates of change.

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